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Medical News Letter

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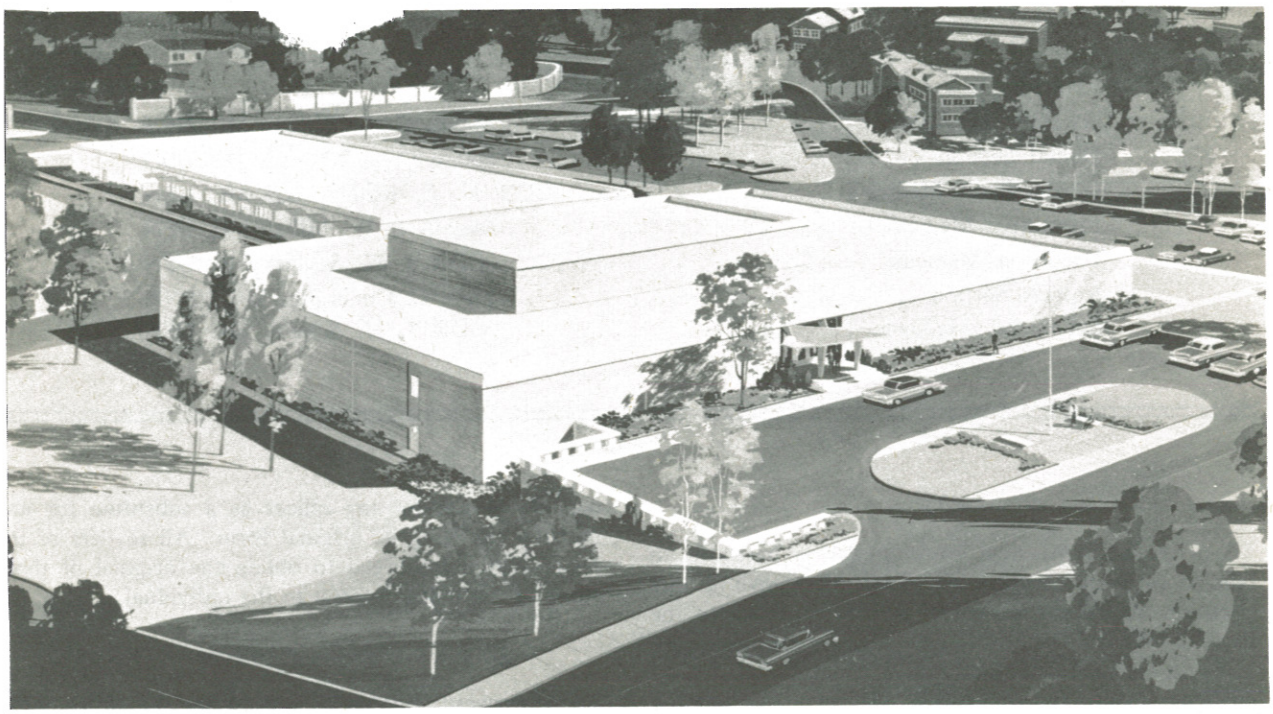

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland 20014, giving full name, rank, corps, and old and new addresses.

FRONT COVER: Photograph of architects' sketch for the new buildings and landscaping of the U. S. Naval School of Aviation Medicine, one of the three Component Commands of the U.S. Naval Aviation Medical Center, Pensacola, Florida. Construction work is well-advanced and it is anticipated that occupancy and commissioning ceremonies will take place in January 1965. Plans and construction are under the cognizance of Department of the Navy, Southeast Division—Bureau of Yards and Docks, U.S. Naval Base, Charleston, South Carolina. Hugh J. Leitch and Moreland Griffith Smith of the firm of Sherlock, Smith and Adams, Architects-Engineers, 2925 Navy Blvd., Pensacola, Florida. (Official U.S. Navy Photograph, Photographic Laboratory, Naval Air Station, Pensacola, Florida)———Editor

The issuance of this publication approved by the Secretary of the Navy on 4 May 1964.

AVIATION MEDICINE SECTION

SPECIAL FEATURE

U. S. Naval Aviation Medical Center, Pensacola, Florida

The U.S. Naval Aviation Medical Center, located aboard the Pensacola, Fla. Naval Air Station, contributes a major portion of the Navy's medical program of adapting man to flight.

It was established on 8 April 1957 by authority of the Secretary of the Navy and commissioned on 30 April 1957 by Rear Admiral B. W. Hogan MC, then Surgeon General of the Navy.

Occupying a little over 39 acres of land, the Center is comprised of the U.S. Naval Hospital, U.S Naval School of Aviation Medicine, and U.S. Naval Aviation Medical Center Staff Unit.

Rear Admiral Langdon C. Newman MC, is the fourth Commanding Officer and the second officer of flag rank to command the Center.

Through joint utilization of the professional staff of the U.S. Naval Hospital and the U.S. Naval School of Aviation Medicine, consultation and diagnostic services are available to all military activities in the Gulf Coast area—from Panama City, Fla, to New Orleans, La. and north to Atlanta, Ga.

A clinical aspect of the Center is the special board of flight surgeons, composed of top medical specialists who convene each week to evaluate all "problem cases" arising throughout Naval and Marine Corps aviation.

The U.S. Naval Hospital, though not one of the largest, is considered to be one of the Navy's finest. It has been approved by the Bureau of Medicine and Surgery to conduct 12 months rotating internship programs and is accredited by the Joint Commision on Accreditation of Hospitals of the United States and Canada.

RADM LANGDON C. NEWMAN
Official U.S. Navy Photograph, Photographic Laboratory, NAS, Pensacola, Florida.

U. S. NAVAL HOSPITAL—PENSACOLA, FLA.

Official U.S. Navy Photograph, Photographic Laboratory, NAS, Pensacola, Florida.

Under the command of Captain Merrill H. Goodwin MC, the Hospital is situated in the southwestern section of the Naval Air Station overlooking Pensacola Bay and the Gulf of Mexico.

It is reported that Pensacola is the site of the first U.S. Naval Hospital. The present structure, dating from 1941, houses the fifth in a series of Hospitals in Pensacola. The Hospital, equipped with 428 operating beds and 25 bassinets, has a staff of 100 officers, 170 enlisted personnel and 101 civilian employees.

The modern facilities and top medical experts at the Naval Hospital are augmented by 24 prominent civilian consultants in medical specialties from Pensacola and Mobile, Ala.

On the staff are medical and dental officers with specialized training in the fields of general surgery, orthopedic surgery, internal medicine and cardiology, obstetrics and gynecology, pediatrics, radiology, pathology, neuropsychiatry, dermatology, urology, otorhinology, ophthalmology, and oral surgery.

In keeping with the modern trends in hospital management, the Naval Hospital currently employs a variety of new techniques ranging from the use of a selective menu system for feeding patients to the use of a recovery room for the post-operative care of surgical patients.

The scope is indeed wide and continues to grow and adjust to the modern procedures which are recommended and accepted in the better circles of modern medicine. It offers excellent medical care for military personnel and their dependents arount the clock, year 'round.

The U.S. Naval School of Aviation Medicine, under the command of Captain Henry C. Hunley, Jr. MC, has a dual mission—that of training aviation medical department personnel and conducting aerospace medical research.

Officer training programs include: a six-month training program for medical officers leading to designation as naval flight surgeons; two-year residency program in aviation medicine leading to board certification in Preventive Medicine (Aviation Medicine); a six-month training program for experimental psychologist; a four-month training program for aviation physiologists; and refresher courses for naval flight surgeons.

CAPT. MERRILL H. GOODWIN
Official U.S. Navy Photograph, Photographic Laboratory, NAS, Pensacola, Florida.

CAPT HENRY C. HUNLEY, JR.
Official U.S. Navy Photograph, Photographic Laboratory, NAS, Pensacola, Florida.

Enlisted training programs include conducting schools in aviation medicine and aviation physiology technique.

The School of Aviation Medicine supports the Naval Air Training Command in the psychological testing and selection of personnel.

Physiological indoctrination and instruction of non-medical aviation personnel in high altitude, night vision, emergency escape procedures and other related fields are also provided.

Examining facilities and highly qualified senior naval flight surgeons are available at the School to determine the physical fitness of personnel for admission to and retention in the Naval Aviation Training Program.

Research in aviation medicine preceded the official establishment of the Naval School of Aviation Medicine.

Although the major research activities of the School are still in the field of aviation medicine, the research staff has reoriented much of their program in order to undertake investigations relevant to bioastronautics.

These studies include cosmic radiation, exotic environments, bizarre accelerations, animal and human space flight, selection of astronauts and medical aspects of recovery of astronauts.

As early as the summer of 1940, a group of scientists, sponsored by the Bureau of Medicine and Surgery and the National Research Council, conducted clinical studies and various physiological and psychological tests on 1,056 student aviators and flight instructors. This longitudinal study of normal individuals has been followed at intervals ever since and is referred to as the "1,000 Aviator Program."

The School of Aviation Medicine will move into its new facilities in January 1965.

These newly constructed facilities will consist of two windowless, air-conditioned buildings with a combined total area of 90,000 square feet (see front cover of this issue of Medical News Letter).

The main building is a two-story structure, with an animal penthouse, providing spaces for administration and research.

The second building will provide classroom facilities for the training of student flight surgeons and modern facilities for the aviation physical examination division.

The recently dedicated Vestibular Laboratory houses not only the Slow Rotation Room and a Human Disorientation Device, but a newly constructed Coriolis Acceleration Platform.

This and the Vestibular Laboratory annex, which will house a horizontal linear oscillator, an animal centrifuge, and a visual display screen, will continue to be one of the Command's major research facilities.

CAPT FRANCIS L. WESTBROOK
Official U.S. Navy Photograph, Photographic Laboratory, NAS, Pensacola, Florida.

The newest addition to the Center is the U.S. Naval Aviation Medical Center Staff Unit, commanded by Captain Francis L. Westbrook, MSC. This unit was established on 22 April 1963 to provide administrative support to the commanding officer of the Naval Aviation Medical Center and members of his staff. This is accomplished by performing routine functions of command in the administration and discipline of enlisted personnel assigned to the staff of Admiral Newman.

Specialized Training in Aviation Medicine

A limited number of medical officers each year are afforded the opportunity for specialized training in aviation medicine.

Medical officers selected for such training are sent to the U.S. Naval School of Aviation Medicine at the Naval Aviation Medical Center, Pensacola, Florida, for a course of instruction lasting about six months, and, upon successful completion of the course, they are designated naval flight surgeons.

The curriculum is divided into two parts. The first, approximately four months, is a good general review of all medical subjects, with emphasis placed on a few subjects which are more important in aviation medicine, i.e., ophthalmology, otolaryngology, psychiatry, cardiology, and physiology—both respiratory and cardiovascular. The second phase, approximately two months, is devoted to flight training. This training should qualify one to solo aircraft, although flight surgeons and student flight surgeons will not be required to do so. Medical officers designated as flight surgeons and ordered to duty involving flying are entitled to additional pay while so serving.

Duty assignments of flight surgeons are to naval air stations, to various type squadrons—both Navy and Marine—to aircraft carriers, etc. Station hospitals on major naval air stations provide professional opportunities in all respects similar to those in smaller navai hospitals. In addition, there is opportunity for considerable research in aviation medicine, dealing with such problems as selection and training of pilots, disorientation, "g" forces, oxygen supply, protective equipment, escape from high speed, high flying aircraft, etc.

All medical officers, whether regular or reserve, are required to sign a "service agreement" before being ordered to any duty under instruction. Therefore, should you desire to apply for duty under instruction in aviation medicine, you should include the following statement: "If my request is approved, I agree to re main on active duty for one year beyond the comple tion of the course, or for six months beyond my current obligated service, whichever is longer." This agreement normally extends an officer's active duty status by the length of the course, or a period of six months.

Your request should be addressed to the Chief, Bureau of Medicine and Surgery, Department of the Navy, Washington, D.C. 20390, with the subject: "Course of instruction in aviation medicine; request for." Include the service agreement as stated above. Classes convene each January, July, and October.

Certification in Aviation Medicine

Reqirements of the American Board of Preventive Medicine for Certification in Aviation Medicine are:

1. Preventive Medicine and Public Health—1 academic year.
2. Residency in Aviation Medicine—2 years.
   a. Approved and supervised clinical and field practice or research.
3. Practice of Aviation Medicine—3 years.
   a. Approved clinical and field practice, research, or training.

U. S. NAVY PLAN

1. Academic schooling
   a. School of Aviation Medicine to designation as Naval Flight Surgeon—6 months.
   b. Preventive Medicine and Public Health, civilian university—1 academic year.
2. Residency in Aviation Medicine
   a. Rotating residency—School of Aviation Medicine—24 months.
3. Practice in Aviation Medicine
   a. Approved field and fleet practice—30 months.

OUTLINE OF THE NAVY SIX YEAR PLAN

I. Academic Schooling

The first phase is the basic regular course leading to the designation of Naval Flight Surgeon. This course, of six months' duration, is conducted at the Naval School of Aviation Medicine, Pensacola, Florida, and classes convene thrice each year. The course familiarizes the student with the application of the clinical specialities to aviation medicine, the aerospace equipment utilized, and actual flight training. Those students who are physically qualified and successfully complete the flight syllabus are permitted to solo.

II. Practice in Aviation Medicine

The second phase is one of 24 months or more of general Aviation Medicine practice. Prospective candidates for the Boards would have the privilege of requesting billets that would offer the required opportunities. In general, the majority of the billets to be filled by men at this level of training would be operational billets with the fleet and with the Marines.

III. Postgraduate Training

The third phase is one of an approved graduate course in Preventive Medicine at an acceptable civilian university leading to the degree of Master in Public Health. It shall consist of an academic year of schooling in the principles and practices of preventive medicine.

IV. Residency Training Period

The fourth phase shall be one of 24 months under direct supervision of the School of Aviation Medicine. It is believed that in this phase, recognition of individual preferences should be taken. From experience it is proposed to recognize this variation by allowing special research on a project of their choice during the program. The training is a mixed type with rotation through the departments of ophthalmology, otolaryngology, neuropsychiatry, cardiology, aviation physiology, and work at a U.S. naval hospital on various medical and surgical services. Field trips to the Naval Aviation Safety Center, Armed Forces Institute of Pathology, Aerospace Crew Equipment Laboratory, and the Aviation Medical Acceleration Laboratory are scheduled during the residency. Upon completion of this phase, and provided a total of six years have elapsed since commencement of the first phase, the individual is eligible for examination by the American Board of Preventive Medicine in Aviation Medicine.

Application

Applications for residency training in aviation medicine should be made by means of an official letter, addressed to the Chief of the Bureau of Medicine and Surgery, and forwarded via the chain of command. Applications must be submitted in time to reach the Bureau by 15 August of the year preceding commencement of desired training. The BUMED Professional Advisory Board will consider the initial application for residency training as being an application for the entire period required to become Board eligible in the specialty. For further details, applicants are referred to BUMED Instruction 1520.10C.

More than 75% of human cancers are potentially preventable, either by the removal of control of the causative factors or by the treatment of precancerous conditions.—WHO Chronicle 18(9): 323, September 1964.

MSC Aviation Physiology Program

The Aviation Physiology Program of the Navy Medical Service Corps is administered by the Aviation Medicine Division of the Bureau of Medicine and Surgery. Its members share an important role in the Navy Medical Department's vast program of training naval aviators and aircrewmen to cope with the hazards of flight which may be encountered in the use of high performance naval aircraft. Unlimited opportunities exist for professionally qualified individuals who are interested in the various aspects of aerospace medicine.

Aviation physiologists are assigned to major naval aviation activities where duties consist of providing instruction in the physiological aspects of the high altitude environment, oxygen breathing equipment, cabin pressurization, personal airborne protective equipment, night vision techniques, use of the ejection seat, and fitting and operation of space suits. Physiological training devices, such as the low pressure chamber, the ejection seat trainer, and the night vision trainer, are operated under the supervision of the aviation physiologist. Officers whose duties require their exposure to simulated high altitudes in low pressure chambers may be paid special hazardous duty pay of an additional $110 per month.

Physiologists in training assignments who meet or acquire the educational requirements and demonstrate a capacity for research may move into the research program or develop a balanced career pattern of research and training. There are assignments combining in varying degrees research, test, and evaluation with training.

Aviation Physiology is only one of a number of specialties in the Medical Allied Sciences Section of the Medical Service Corps and constitutes a relatively small segment of the total Corps. While it is, of necessity, a very highly select group, there are a few vacancies available each year for qualified people to come on active duty and participate in the program. Applications are desired particularly from individuals who have received a Ph.D. degree or will receive the degree prior to actual appointment in the Navy. Such individuals are commissioned in the Naval Reserve as Lieutenants (junior grade) with eighteen months precedence is rank. Applications are solicited from those who possess a Master's degree with advanced academic training in physiology. Such individuals are commissioned in the Naval Reserve as Ensigns with a current date of rank. Applications are also desired from individuals who hold a baccalaureate degree from an accredited college or university with a major in biology, physics, or chemistry who will receive the degree prior to appointment in the Navy. Selected candidates in the latter category will be commissioned Ensign in the Naval Reserve upon completion of the Aviation Officer Candidate School at the Naval Air Station, Pensacola, Florida. Aviation physiologists interested in a career in the Navy Medical Department may, under present regulations, apply for augmentation into the Regular Navy after a prescribed period of active duty in the Naval Reserve.

In addition to the opportunity to serve their country in their chosen profession, the Navy Medical Department also provides members of the Medical Service Corps certain financial assistance in the pursuit of further graduate education, work shops and seminars. Consultative and statistical assistance is available to those desiring to accomplish individual research endeavors, and officers are encouraged to participate in both regional and national professional meetings.

On 18 September 1964 there were thirty (30) Aviation Physiologists on board, 1 Captain, 6 Commanders, 6 Lieutenant Commanders, 6 Lieutenants, 6 Lieutenants, Junior Grade, 4 Ensigns and 1 Warrant Officer. Of this number, twenty-one (21) were U.S. Navy, 9 were U.S. Naval Reserve.

One (1) was assigned to the Bureau of Medicine and Surgery as Head, Aviation Medicine Equipment Branch, with additional duty at the Bureau of Naval Weapons; nineteen (19) were serving in training assignments; nine (9) were assigned to laboratories where research, development and evaluation studies are carried out in addition to training. Of this latter number, one (1) was assigned to the Bureau of Medicine and Surgery on additional duty to the Aviation Medicine Training Branch; one (1) was assigned to the Bureau of Medicine and Surgery on additional duty to the Aviation Medicine Equipment Branch, and to the Bureau of Naval Weapons. One (1) was attending George Washington University on a full time basis. One (1) officer candidate was under instruction at the U. S. Naval School Pre-flight, U. S. Naval Air Station, Pensacola, Florida.

Application procedures are conducted through the Navy Recruiting Stations, and the one nearest your home can assist you in the initiation of an application for appointment and commission in the Medical Service Corps, U. S. Naval Reserve, as aviation physiologist.

If additional information is desired, please feel free to address inquiries to the Director, Medical Service Corps Division, Bureau of Medicine and Surgery, Department of the Navy, Washington, D.C., 20390.

Rambling with Aviation Physical Qualifications (Code 511)

By CDR N. D. Sanborn, MC USN, Head of Aviation Physical Qualifications Branch (Code 511), BUMED.

Communication is an essential ingredient of team work. The selection and retention of individuals possessing the physical qualifications required of aviation personnel in the Navy are the prime roles of the naval flight surgeon in this branch of the Bureau of Medicine and Surgery. With safety as a guiding light, efficient and effective compliance with these roles requires team work of the first order. The communication between the field and this Bureau, therefore, should correspondingly be of prime importance and magnitude.

With this initial endeavor, Aviation Physical Qualifications (BUMED Code 511) plans to periodically submit articles pertaining primarily to physical qualifications, but will also include other aspects associated with the specialized practice of aviation medicine. In order for these articles to be more meaningful, correspondence from the field will be welcomed and is encouraged. Code 511 is interested in constructive criticism of existing qualifications, problem areas in specific aviation personnel, experiences that might prove helpful to others and inquiries concerning specific or general aspects of physical qualifications of aviation medicine for which an answer, an explanation or additional information is desired. The exchange of ideas and information between the Bureau and the field should be helpful to both and foster improved team work potentialities.

ADVANCE INFORMATION

1. An advance change to the Manual of the Medical Department has recently been submitted and should be published in the near future. This change has resulted in many revisions in Section V Aviation, articles 15–59 through 15–73. Some revisions of note are as follows:

a. Inclusion of BUMED Instructions 6110.4 through 6110.7.

b. Revision of weight standards for the NAO (H) formally (1) or (B/H) to conform with the same standards as for the naval aviator. The stature height and sitting height were retained.

c. NAO (H) applicants—visual acuity standards raised to 20/40 or better.

d. NAO (L) applicants—visual acuity standards raised to 20/100.

e. Aircrewmen—depth perception not required.

f. A requirement to insure that a baseline ECG is a permanent component of the health records of all Class 1 aviation personnel.

g. A requirement to insure that all aviation personnel are grounded when admitted to a hospital or otherwise placed on the sick list, and will remain grounded until they have undergone such aviation physical examination as deemed necessary by the flight surgeon, and a Flight Clearance Certificate (NAVMED Form 1381) has been submitted as prescribed.

h. The requirement and instructions for tonometric measurement of intraocular pressure have been added.

Constructive criticism of the Manual change, when published, as to discrepancies, inconsistencies and recommendations would be greatly appreciated.

2. A new BUMED Instruction (proposed 6110.8) concerning anthropometric measurements and classification of all aviation personnel is nearing its final stage of clearance and will be distributed in the near future.

a. Personnel in the joint BUPERS and BUWEPS endeavor concerning human factors in weapons systems desire the classification of all aviation personnel on the basis of stature height and sitting height.

b. Blueprints for the anthropometric measuring device and instructions will be forwarded to all activities conducting aviation physicals. The device will be constructed locally, using local funds.

c. Categorization of naval aviators using the height and sitting height classification code will allow revision of the present height standards for entry into flight training (will not apply to U. S. Marine student naval aviators). The new height standards will read—not less than 64 inches and not more than 78 inches, providing the sitting height is not less than 32 inches or more than 41 inches and the buttock-leg length is not less than 36 inches or more than 50 inches.

WHIPPING POST

Code 511 clears and takes action on an average of 1264 health records a week. Of these, an average of 172 or over 10 % must be returned to the examining activity because of an incomplete record, either due to an omission, a disqualifying entry, or need for additional information before a recommendation can be made to BUPERS or MARCORPS.

Know the competency of your own team. It would be physically impossible for the flight surgeon to conduct every aspect of a complete flight physical. However, since the flight surgeon signs the SF 88, he attests to the reliability and accuracy of everything that has been recorded. The flight surgeon must closely supervise, review performances and instruct in order to guarantee accuracy of the recorded findings.

Possibly the most important function of the flight surgeon, in regards to a flight physical, is a conscientious and thorough review of all entries on the finished SF 88 prior to affixing his signature. This is the time to verify the findings the flight surgeon wants recorded and to be certain that the recommendations to BUMED are accurately stated and that the completed form is free of omissions, contradictions, and typographical errors. A little additional time at this point might very well save the flight surgeon, the Navy, and the examinee embarrassment, may prevent delay in obtaining action and can save the time that otherwise would be involved, to say nothing of the monetary implications.

An example which recently came to the attention of this Code: A candidate arrived at Pensacola to enter flight training as a student naval aviator. However, on the entry to pre-flight physical examination (that every candidate receives in Pensacola) the candidate was found to be color blind. On questioning, the examinee related the following: On his initial examination a corpsman asked him if he was color blind. The candidate really not knowing, but wanting nothing to interfere with his acceptance, answered "no". The corpsman recorded in item #64—Passed Falant. Two months later on his active duty physical the findings in #64 were transcribed to the new form and again the candidate was not tested. Testing at Pensacola brought forth the truth and the candidate was found not qualified for any flight program or for appointment to a commissioned grade. He was naturally bitter and resentful on being returned home, after giving up a job to enter the Navy. The Navy is embarassed, receives bad publicity and suffers a monetary loss of not having a future pilot and the expense of transferring the individual from home to Pensacola and back.

This Bureau can only go on what the field submits and in many cases this represents the only contact it has with the individual flight surgeons. Thus an individual flight surgeon can be known by what he signs which, in essence, can indicate his leadership, knowledge and conscientious performance of his duties.

QUERIES AND ANSWERS

1. I have submitted SF 88 and 89, for record purposes only, on individuals found not qualified for flight training only to receive a request for additional information that has no bearing on the disqualifying defect. WHY?

Answer: Code 511 must work closely with the Physical Qualifications and Medical Records Division of BUMED (Code 33) which alone has the power of finding an individual qualified for appointment to a commissioned rank. Code 511 must wait for the commissioning section's action before it can make a recommendation as to the qualifications for entry into duty involving flying. In order to avoid delay, the appointment section first reviews the health record and makes its recommendation or indicates what additional information is necessary to effect action. The record is then sent to Code 511 where it is first reviewed to verify if AQT and FAR test scores are available and the results. Then the record is reviewed to see if all the information necessary to make a recommendation concerning duty involving flying is available. Code 511 initiates all additional information letters to the examining activities on all aviation personnel or candidates. Even though we agree an individual does not qualify for any aviation program, the Navy and therefore the commissioning section is interested in the individual qualifications for appointment and duty in other than aviation programs. Therefore in order to work jointly on all applications, rather than individually, Code 511 must request any information desired by the commissioning section.

2. Why the difference in weight standards for the NAO (I) and aviators since they ride side by side in the same plane?

Answer: Not all pilots fly in aircraft in which the full pressure suit must be worn. The NAO (I) must fulfill this requirement. The requirements for the NAO (I) were agreed upon after joint meeting with all concerned. The revised change to the Manual of the Medical Department standardized the NAO (I) weight to correspond with that of the naval aviator. This Code feels the present weight standards are physiologically unsound and hopes to revise them in the near future. *To Emphasize:* Code 511 encourages and

will welcome correspondence from the field in regards to Physical Qualifications in aviation medicine. Comments as to the desire for further related articles and constructive criticism will also be greatly appreciated.

Specialized Training in Aviation Operational Psychology

The Medical Service Corps offers unique and rewarding careers to officers qualified in any of several facets of experimental psychology. Originally oriented to, and still primarily concerned with, aerospace psychology, specialized training and professional practice are offered in virtually all aspects of behavioral study, including learning, human factors engineering, systems analysis, methodology and criterion research, industrial, engineering and mathematical psychology.

The first stage of this program for all qualified psychologists is a six-months course at the U. S. Naval School of Aviation Medicine, Pensacola, Florida. This course is sufficiently flexible to be adaptive to individuals with different educational backgrounds and professional experience, but maintains a reasonable constancy in the basic content. The course includes:

1. Naval orientation and philosophy.
2. Research problems and methods in the naval environment.
3. Research project planning.
4. Human factors research in Navy laboratories.
5. Flight safety and survival training.
6. Pre-flight and basic flight instruction.
7. Carrier operations.
8. On-the-job training in experimental psychology.

Duty assignments for junior officers are usually to research laboratories. Specific assignments are determined by the experience and research interests of the individual officers within the constraints of billet availability. Officers who have not completed doctoral training have the opportunity to apply for transfer to the regular Navy after eighteen months of active duty, and may then be assigned to Duty Under Instruction at the college or university of choice (provided the level of training required by the Navy is offered) for as much as two years to complete class work, examinations, language requirements, and at least collect data for doctoral dissertation.

In addition to the laboratory billets, there are a number of staff and field billets which offer a rather wide variety of professional experience. There are staff billets in the Bureau of Naval Weapons, the Office of Naval Material, Naval Operations and Naval Research. Field billets include the Naval Air Advanced Training Command, and anti-submarine warfare activities in both the Atlantic Fleet and Pacific Fleet.

There are twenty-nine experimental psychologists on active duty, three of whom are engaged in graduate work. There are currently five unoccupied research billets for which qualified officers are needed, either newly commissioned or as transfers from the Line.

Inquiries concerning the Experimental Psychology program should be addressed to the Chief, Bureau of Medicine and Surgery (Code 513), Department of the Navy, Washington, D. C. 20390.

INDO-NEPAL BORDER ANTIMALARIA CONFERENCE

The third Indo-Nepal Border Antimalaria Conference was held on 5 and 6 June 1964 in Darjeeling, India. These meetings, arranged by the governments concerned in association with WHO, consider the coordination of malaria eradication work in the inter-country border regions. Technical matters of mutual interest to the programmes concerned are also discussed. In addition to representatives from the participating countries, the meetings are attended by participants from WHO and the U. S. Agency for International Development. The previous meeting was held in Kathmandu, Nepal, from 14 to 16 February 1963.—WHO Chronicle 18(9): 358, September 1964.

HELP FOR BOLIVIA AGAINST FOOT AND MOUTH DISEASE

The Government of Bolivia, with the help of the Pan American Sanitary Bureau, which acts as the WHO Regional Office for the Americas, is to undertake a two-year campaign against foot and mouth disease during which 20,000 cattle will be vaccinated in the country's main agricultural region—the 23,000-square-mile Cochabamba Province.

A new, weakened live virus vaccine will be used. It has been developed by the Pan American Foot and Mouth Disease Center in Brazil, and is intended to give much longer protection than the vaccine in present use. —WHO Chronicle 18(9): 357, September 1964.

Of the Flight Surgeon's Function

From: Personnel of the Royal Air Force Investigated During the War, 1939-1945, published by The Air Ministry, Air Publication 3139.

Station and squadron commanders were emphatic that medical officers should be carefully chosen for this work, and they agreed very closely upon the most suitable type of man for it. They preferred a man with fairly wide experience, not one newly qualified. His age should be around 30 years, and he should be mature and have sufficient savoir faire for the crews to come along with their domestic and social troubles. Sometimes a younger man is able to fill this role, and then he has the advantage that he is more likely to play games and enter into a party. Above all, the squadron medical officer must be a good mixer. It is easier for him if he is not teetotal, but though he should drink with the crews, he should always be a little behind them and should not be the life and soul of the party, in case he should lose their respect. He must be a practical man who can cope with an emergency, so that he always has the crews' confidence, but for this, he need not be a good academic physician. In order to maintain their confidence, he must always be available when emergencies arise. He should invariably be present at briefing, take-off, return and interrogation, and should mix freely in the crew rooms. High praise is, "Wherever there is flying, the doc is there." This entails living in the station and taking recreation with the squadron in the crew rooms, the hangars, in the air, the messes and outside parties. Although liaison between the medical officer and the commanding officers should be as intimate as possible, it should be outside the knowledge of the crews.

The crews should look on the medical officer, not only as one of themselves, but as their doctor. They will bring their small complaints to him, and they will expect him to be available in times of disaster. When they bring their anxieties and fears to him, or when by word or sign he sees evidence of deterioration, he should act promptly, for "decision and acceptance of responsibility in these cases is the medical officer's supreme task." The men will make confidences to the medical officer that they would hide from others, and some will even go to a medical officer knowing that he will discuss the problem with the squadron commander, rather than go to the squadron commander himself. In this way, the medical officer obtains a unique position in the squadron, and if he uses it properly, can have a great influence upon squadron morale.

AVIATION SAFETY

During Fiscal Year 1964, the aircraft accident rate (number of accidents per 10,000 flight hours) declined to 1.35, an 8.1 percent improvement over the preceding year and the safest in Naval Aviation history. The fatality rate declined 16 percent over the previous year. There were 500 aircraft accidents, resulting in the loss of 287 aircraft and 199 lives. Aircraft carrier landing accidents also declined in spite of an increase of nearly 29,000 landings made over 1963.

The Admiral Flatley Memorial Award, presented annualy to the leading ships of their type in accident prevention during aircraft carrier operations, was awarded to the USS FRANKLIN D. ROOSEVELT (CVA 42), the USS INTREPID (CVS 11), and the USS IWO JIMA (LPH 2).

TRANSPORT SETS FIRST IN MERCY MISSION

An LC–130F Hercules, commanded by Lieutenant Robert V. Mayer, of Air Development Squadron SIX (VX–6), completed a round-trip flight from Christchurch, New Zealand, to Antarctica on 26 June in an emergency evacuation of B. L. McMullen, builder first class, who was critically injured in a fall. Two planes, with teams of medical specialists on board, flew from NAS Quonset Point to Christchurch where one plane stood by while the other made the hazardous flight. It was the first midwinter landing in history on the Antarctic Continent.

The above two items from: USN "Recent Achievements of the Navy", Office of the Chief of Naval Operations, Washington, D. C., 1 May 1964 to 31 July 1964.

ORIGINAL ARTICLE

SOME RESPONSIBILITIES OF THE NAVY PHARMACIST IN QUALITY CONTROL OF DRUGS

By Captain C. V. Timberlake MSC USN

One of the most important aspects in the control of quality of drugs is the degree of inspection applied to an item just prior to its being used in compounding or dispensing to the patient.

In general, the quality of drugs available to the Navy through the Medical Supply System, is far superior to that found in many of our civilian pharmacies, especially in those more concerned with cut-rate discount operations. The military departments, through the Defense Medical Materiel Board and the Defense Medical Supply Center, employ elaborate and comprehensive means for monitoring or controlling the purity, quality, and strength of pharmaceuticals, including biologicals and chemicals, which are centrally procured, stored, and issued to the world wide medical activities of the U. S. Navy. In the standardization, procurement, storage, and issue of these drugs, there are controls at every stage specifically designed to make available to the pharmacist only the best pharmaceuticals, in spite of the many pitfalls encountered in the competitive procurement required by Government Regulations. This system, like all other man-devised operations, is not perfect. The Defense Medical Supply System has tightened its control of quality to the extent that it can operate with such a degree of practical efficiency and assurance that only quality medications are received by the patient.

There is still, however, one link in the chain of quality control which has not received enough attention, and which, in my opinion, is the most important link of all. That is the pharmacist who compounds, labels and dispenses the end product to his patient. It is at this point that the last opportunity presents itself for the Navy pharmacist to exercise his scientific and professional training, experience, and judgment in conducting a final inspection of the medication before handing it to the ultimate user.

Now, what are some of the ways the pharmacist may strengthen this last link in the chain of quality control of drugs? First, he must bring into practice all the scientific, professional experience and judgment that he has acquired in becoming, and in functioning as, an expert in the compounding and dispensing of medications. Second, he should maintain a constant close surveillance of those items which bear an expiration dating and/or which require special storage conditions. Third, he should promptly report and suspend from issue and use, any item suspected of being defective or deteriorated.

Too many of our dispensing pharmacists are not really aware of the many areas in which they can assure that only first class medications are dispensed. For example, close inspection may reveal the following: *Tablets*—(uncoated)—May have chipped and overturned edges which are irritating to the throat when swallowed, not to speak of the lowered potency of tablets having large chips missing. Tablets may be speckled or mottled, evidence in some cases that contamination exists or that the formulation was not properly mixed prior to the tableting process. Thyroid tablets and other uncoated tablets of glandular substances, due to their peculiar formulation, are characteristically mottled in appearance and may not be defective. The pharmacist should become acquainted with these products and processes and understand why. Tablets may vary in size and weight which would result in nonuniform availability of the active ingredient(s). Nonuniformity of color or appearance of tablets should be cause to suspect that the tablets are not of uniform quality and/or may indicate some degree of deterioration: For example, the darkening of Aminosalicylic Acid tablets, the formation of crystals (of salicylic acid) on tablets, even on the sides of the container of aspirin tablets, or, as has been observed, the presence of metallic chips (apparently from tableting machines) imbedded in or on the tablets. An odd or unusual odor from the stock bottle may indicate that deterioration or decomposition has taken place, e.g. Aminophylline Tablets in which a strong ammoniacal odor, with or without discoloration of the cotton space filler, has developed.

Tablets—(coated)—May show evidence of chipping, cracking, peeling, pitting, mottling or other surface defects which may indicate deterioration. This is especially important if the tablet happens to be enteric

coated. An imperfect coating may permit the release of the active ingredient(s) prior to entering the intestinal tract. Occasionally, coated tablets, e.g. (Ferrous Sulfate or Chlorpheniramine Maleate, etc.) will change color from within the tablet outward.

Parenteral Preparations—Upon visual inspection these may show the presence of particulate or undissolved material. They should be substantially free from such foreign matter or promptly suspended from issue. Exceptions to this are, e.g. Sterile Epinephrine Suspension and types described on page 817 of the USP *XVI*. This inspection is easily performed by inverting the bottle, ampoule, etc.; and twirling it against a light, then a dark, background which would immediately reveal the presence of particulate matter. I have actually found a housefly contained in a 30 cc hermetically sealed container of distilled water for injection. Fleas have been found in hermetically sealed tubes of sterile gut suture material. For material bearing the same lot, control, or batch number, non-uniformity of color, or presence of color in a normally colorless solution, almost always indicates a defective product and should be reason for suspicion. Cracked or leaking ampules or vials, frequently found on opening the unit container, are usually due to damage incurred during shipment and handling unless there is definite evidence of closure failure. Leakage combined with a definite shortage in net volume content would justify the suspicion that the contents are no longer sterile.

Suspensions, Magmas and Emulsions—On short term standing, these preparations usually exhibit some degree of separation into a lower, more viscid or dense portion, and a smaller, more limpid or less dense upper portion. Upon shaking vigorously for 2 to 3 minutes (longer for large bulk containers, e.g. 1 pint to 1 gallon) they should become uniformly homogeneous, readily pourable, and of normal color and appearance. Some suspensions, e.g. Trisulfapyrimidines Suspension, and Chloramphenicol Palmitate Oral Suspension, on long standing, become so thick and viscid that even several minutes of vigorous shaking does not render them homogeneous or pourable. Garnet red crystals have been observed in the above Trisulfa Suspension. The presence of gaseous pressure and/or an unpleasant odor when units are first opened are usually an indication of deterioration by fermentation.

Suppositories—(rectal)—May not be uniformly tapered to a point and may contain crystals on the surface which could cause irritation when inserted. This is also evidence of poor formulation and uneven distribution of active material. A foreign odor, not characteristic, may be evidence of contamination and should be reason for suspicion. Misshapen or collapsed suppositories would indicate improper storage of item.

(vaginal)—Same defects may be found as in rectal suppositories; however, vaginal suppositories are ovoid in shape.

Ointments—Upon examination, many ointments may be noted to contain lumpy or gritty material, to show non-uniformity in color and consistency, and to be rancid.

Chemicals: Organic, Inorganic—Most chemicals are white (or "colorless"), although there are many notable exceptions, e. g. Sulfur, Charcoal, Iodine, Iron Salts, Iodochlorhydroxyquin, etc. Therefore, any noticeable departure from the normal color should lead to suspicion of improper identity, or of contamination or deterioration. Some chemicals, in time, attack the container's closure and become contaminated; some absorb moisture or carbon dioxide and become altered physically and chemically; some become caked, fused, or massed; others become more friable. Some drugs develop a foreign odor; in others the initial odor becomes weakened. Before using a stock chemical for compounding and dispensing, or for testing, the Navy pharmacist should assure himself that the item corresponds with the known description; if it does not he should investigate.

Asecond most important link in the chain of quality control by the pharmacist is the close check which must be kept on dated products. Material, which is nearing the expiration of its stated potency period, should be plainly and conspicuously marked so that the material is not inadvertently dispensed beyond that period. Nor should the patient be dispensed medication which would expire during the medication period. To preclude this, it would be wise in include the expiration date of the item (if short-dated) on the label of the dispensed medication. As a further extension of quality control safeguards, it is good practice to include the manufacturer's name and lot number on the filed prescription in the event an unusual or untoward reaction occurs, in which case it would be relatively simple to positively identify the material and initiate an adverse drug reaction report. (In this connection, I'm afraid, too many dispensing pharmacists do not recognize the importance of assigning manufacturer's names and lot or control numbers to prescriptions. We know that Federal Laws require this information to be included as a part of the label of the item by the manufacturer. Then why should we permit the pharmacist to dispense the item to the ultimate user without recording the same information on the filed prescription? Three or four days later the patient may develop a reportable reaction to the drug, yet the pharmacist may be unable to positively identify the manufacturer and/or the lot number since the original stock bottle or container may have been discarded. This would seem to me a compromise of the entire quality control system precisely at the most important stage. As a matter of fact, complaints have been received from military installations on drug items with the name of the manufacturer and lot number listed as "unknown.")

The final and one of the most important steps the dispensing Navy pharmacist can take in carrying out his responsibility as a guardian of quality medications is

that of immediately suspending from issue and use, and reporting via established procedure, any material suspected of being defective. In doing this, he will not only advise the Defense Medical Supply Center of defective material, which may be replaced by the manufacturer at no cost to the government, but cause action to be taken to suspend the material from issue and use throughout the supply system if further investigation reveals it to be defective, or, perhaps, even dangerous to use.

Again, let me emphasize that the dispensing pharmacist is the final and most important link in the "Quality Control Chain" which guarantees that only high quality, effective and safe medications reach the patient.

Pathogenesis and Treatment of Urinary Infection

B. G. Clarke MD, Associate Professor of Urology, Tufts University School of Medecine and J. Hartwell Harrison MD, Clinical Professor of Genito-Urinary Surgery, Harvard Medical School. Reprinted by permission of the authors from "Diseases of the Urinary and Genital Organs" (A Review and Bibliography)—pps 20-26, Boston, Mass., 1960.

Tables 1, 2, and 3, reproduced through the courtesy of Dr. George Austen, summarize data based on experience of the Boston University Urology Service at Boston City Hospital in March 1960.

Table I

Antibacterial Agents—GU Infections

Bacteriostatic	*Bactericidal*
Tetracyclines	Penicillin
Chlortetracycline	Streptomycin
Oxytetracycline	Kanamycin
Tetracycline	Humycin
Demethylchlortetracycline	Neomycin
Chloramphenicol	Bacitracin
Erythromycin	Vancomycin
Ilotycin	Polymyxin B.
Oleandomycin	Colimycin
Carbomycin	Ristocetin
Spiramycin	
Novobiocin	
Cathomycin	
Albamycin	
Sulfonamides	
Nitrofurantoin	
Mandelamine	

Table II

Antibacterial Drugs—Spectrum of Activity

Primarily Gram Positive	Primarily Gram Negative	Broad Spectrum
Penicillin	Streptomycin *	Tetracyclines
Erythromycin ÷	Kanamycin *	Chloramphenicol
Novobiocin ÷	Humycin *	Sulfonamides
Bacitracin	Neomycin *	Nitrofurantoin
Vancomycin @	Polymyxin B.*	Mandelamine
Ristocetin	Colimycin *	

÷ = Bacteriostatic
@ = Occasionally effective for gram negative organisms (Proteus)
* = Occasionally effective for gram ÷ organisms also.

Of utmost importance in treatment of urinary infections, even when they are apparently cured, is that treatment be continued long enough, and that follow-up (by clinical means, urinalyses and cultures) be carried out for months after apparent cure and discontinuance of treatment. Cultures may be negative during treatment, only to become positive later. Long observation assures that asymptomatic recrudescence of bacterial growth does not appear and that the risk of chronic pyelonephritis and its long term fatal sequelae of hypertension and renal failure be minimized.

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TABLE III

Drug Therapy of GU Infections

Drug of Choice

ACUTE INFECTION	1	2 *	Alternative *	Ambulatory
STAPH.	PENICILLIN	ERYTHROMYCIN CHLORAMPHENICOL	NOVOBIOCIN CHLORAMPHENICOL VANCOMYCIN	PENICILLIN (P.O.) TETRACYCLINES
STREP. ENTERO-COCCUS	PENICILLIN STREPTO-MYCIN	ERYTHROMYCIN CHLORAMPHENICOL STREPTOMYCIN	BACITRACIN RISTOCETIN	TETRACYCLINES SULFA ERYTHROMYCIN MANDELAMINE
GONOCOCCUS	PENICILLIN	ERYTHROMYCIN	———	PENICILLIN
E. COLI	CHLORAM-PHENICOL	STREPTOMYCIN CHLORAMPHENICOL COLIMYCIN	POLYMYXIN B. KANAMYCIN	SULFA NITROFURANTOIN TETRACYCLINES
COLIFORM	CHLORAM-PHENICOL	STREPTOMYCIN CHLORAMPHENICOL COLIMYCIN	POLYMYXIN B. KANAMYCIN	"
A. AEROGENES + (FRIED-LANDER'S)	CHLORAM-PHENICOL	STREPTOMYCIN CHLORAMPHENICOL COLIMYCIN	POLYMYXIN B. KANAMYCIN	"
Ps. AERUGINOSA	SULFA CHLORAM-PHENICOL	CHLORAMPHENICOL STREPTOMYCIN TETRACYCLINES KANAMYCIN	COLIMYCIN POLYMYXIN B.	"
PROTEUS	SULFA	CHLORAMPHENICOL STREPTOMYCIN TETRACYCLINES KANAMYCIN	NOVOBIOCIN VANCOMYCIN	"
H. INFLUENZEE	STREPTO-MYCIN	CHLORAMPHENICOL KANAMYCIN	KANAMYCIN CHLORAMPHENICOL	"
TUBERCULOSIS	STREPTO-MYCIN *	PAS + ISONIAZID	CYCLOSERINE	

* ONLY AFTER SENSITIVITY TESTS

TABLE IV

Drug Therapy of GU Infections

Drug	Av. Daily Dose. Gms.	Max. Daily Dose Gms.	Av. Blood Level /ml	Max. Blood Level /ml	Urinary Level /ml	Resistant /ml
SULFA	4.0–6.0	6.0	50	200	500	500
PENICILLIN	1.2 mil. U *	6.0–10.0 mil. U *	2–5	50	1000	1000
STREPTOMYCIN	1.0 *	4.0 *	20	50	250	250
KANAMYCIN	1.0 *	2.0 * (max. total 40.0)	2–5	25	1000	1000
HUMYCIN	——	——				
NEOMYCIN	0.6 *	0.6 *				
POLYMYXIN B.	0.10 *	0.25 *	3	12	100	200
COLIMYCIN	2.0 mil. U *	4–8 mil. U *	2.5–4.5	?	HIGH	HIGH TITERS
CHLORAMPHENICOL	1.0–2.0	4.0 or 1.0 +	3	12	200	200
TETRACYCLINES	1.0–2.0	4.0 or 1.0 +	3	12	200	200
NITROFURANTOIN	0.3–0.4	0.6	0	5	10	10
ERYTHROMYCIN	1.0	4.0 or 2.0 +	3	12	200	200
OLEANDOMYCIN	1.0	4.0 or 2.0 +	3	12	200	200
NOVOBIOCIN	1.0	4.0 or 2.0 +	3	12	200	200
VANCOMYCIN	2.0 +	2.0 +	5	5	HIGH	HIGH TITERS
BACITRACIN	100,000 U *	100,000 U +*				
RISTOCETIN	1.0–2.0 +	2.0 +				

* = Intramuscular + = Intravenous

HAZARDS OF TREATMENT

Every drug powerful enough to eradicate organisms from the urinary tract has the capacity for producing severe reactions. Antibacterial agents should not be employed until it has been ascertained that the patient has no history of sensitivity to similar drugs or other contra-indications.

With exposure to any antibacterial agent microorganisms, if they are not immediately eradicated, tend to develop drug resistance. This is a hazard in any of long-term therapy, particularly when chronic infection or structural urinary tract abnormality lessen the chance of immediate cure. Drug-resistant strains are capable of causing acute, and sometimes fatal, exacerbations of infection and are particularly hazardous on account of the inaccessibility of the organisms to effective therapy.

A "superinfection" is an infection developing, often elsewhere than in the primary site of infection, when one element of microbial flora of the body is suppressed by specific antibacterial therapy. Other strains, freed from competition for sustenance, multiply to produce drug-resistant clinic infections. For example, a patient with an indwelling urethral catheter might harbor a subclinical cystitis due to strains of staphylococci and *E. coli* which ordinarily hold each other in check by competition. The "prophylactic" administration of penicillin might eliminate the staph, allowing the development of acute *E. coli* cystitis, pyelonephritis, and septicemia.

A widespread practice has developed of giving various antibacterial drugs, usually in low doses, to patients with indwelling catheters. This, it is assumed, may reduce the incidence of urinary infection. It is clear, however, that infection can almost never be eliminated from the urinary tract until the catheter is no longer necessary regardless of what drugs are used. "Prophylactic" administration of antibiotics, sulfonamides or other antibacterial agents exposes the patient to the hazards of drug toxicity, of superinfection, and of the development of drug-resistant urinary flora. When acute complications such as acute pyelonephritis, urethritis, prostatitis or epididymitis due to such flora occur, they cannot be treated successfully by the usual measures.

Because of the danger of renal failure and hypertension associated with unrecognized chronic pyelonephritis patients who have been treated for urinary infections with apparent success must be studied for long intervals until it is certain that they are free of infection.

As an arbitrary doctrine, it may be stated that any patient in whom symptoms have not subsided and urinary cultures become negative within 48 hours of beginning treatment must be regarded as a treatment failure and be promptly re-evaluated. In general, treatment should be continued for at least a week after clinical remission.

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FROSTBITE

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MEDICAL BACKGROUND

Frostbite is much better understood than it was little as a decade ago, but there are still some areas of disagreement even among experts regarding the details of both pathology and treatment of the injured part. This article is a summary of what I believe to be the soundest present thinking on the subject.

Except in rare and dramatic cases, frostbite is restricted either to the extremities of the body or to areas like the heels, chin and cheeks, nose and ears. Adequate circulation of blood not only keeps the extremities warm but also provides a constant supply of oxygen and nourishment to the cells. Any substantial disruption of this circulation causes damage to the tissue involved and frostbite, no matter how trivial, results in just this. The severity of the injury is influenced by the intensity of the initial exposure and the length of time before adequate circulation can be restored. Arteries carry fresh blood from the heart to nourish the body. As they proceed through the system, they repeatedly fork and subdivide so that, as the extremities and surface of the skin are approached, the stream of blood which they carry gets smaller and smaller. At the very end of the line, the actual transition from artery to vein occurs in what is known as a capillary loop—and our vital tissues are honeycombed with myriads of these loops which form capillary beds.

After an artery has tapered to an extremely small size, with an outside diameter of about a fifth of a millimetre, it is known as an arteriole. After passing through the arterioles, the blood enters the intricate maze of infinitesimal capillaries. Unlike the arteries and arterioles, the capillaries are not sheathed in muscle. They are tiny hairlike tubes about a millimetre long and only about one-hundredth of a millimetre in diameter—so small, in fact, that red blood cells travel through them virtually in single file. Several capillaries are supplied with blood by a single arteriole. This network reconverges into a single venule at the terminus of the capillary bed.

The transfer of oxygen and nourishment from the bloodstream to the body tissues takes place in these capillary beds—passing directly through the delicate walls of the capillaries to feed the living cells adjacent to them. Under normal conditions, the capillaries are impervious to the blood itself (both plasma and corpuscles) which travels through them into the venules, then to the veins, and back to the heart, kidneys and lungs for purification and revitalization before starting another circuit through the body.

* For further information about the author, see the Medical News Letter Vol. 44, No. 7, in which the first installment of this article appeared.

It is in the arterioles that the initial reaction leading to frostbite takes place, and this reaction is the result of the important basic difference in structure between the arterioles and the capillaries.

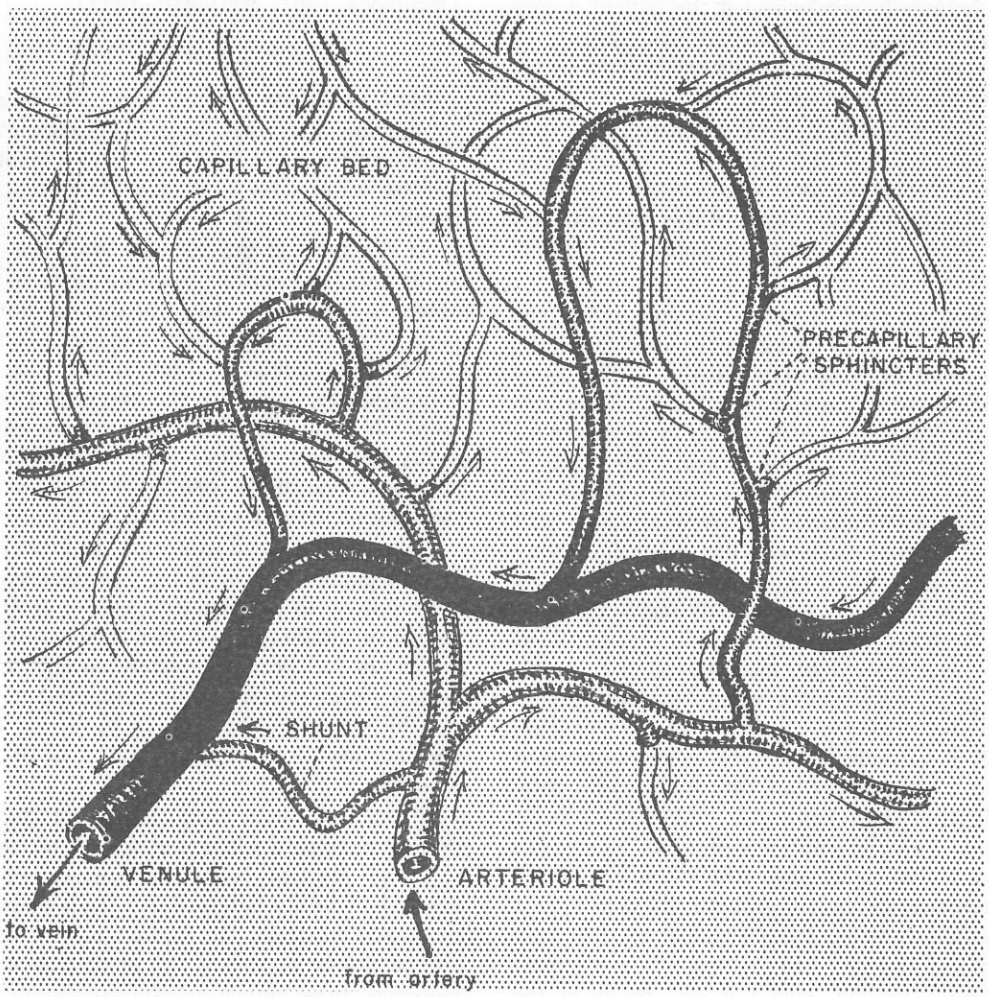
An arteriole has a powerful system of muscles built into its resilient but microscopic walls. These muscles are innervated from the autonomic nervous system; consequently, when tissue is chilled, the arterioles in the area of contact instantly and involuntarily contract in an effort to prevent the excessive loss of body heat. If the chilling is only brief and moderate, the blood flow to the capillary beds merely slows down or is diverted to other nearby arterioles and capillaries not yet affected by this chilling. On the other hand, if the chilling is intense, the constriction of the arterioles in the chilled tissue can totally close them to the passage of blood. If such a reaction is only momentary, no damage occurs, but the longer it lasts, the more the chance of injury to the arteriole and to all the tissue it serves.

A capillary, in sharp contrast to an arteriole, is composed of non-muscular tissues whose inner stream of blood never changes volume in a healthy person—although the movement of blood through the capillaries is not steady, but is constantly stopping and starting under the control of the minute precapillary sphincters. These extraordinary little valves are believed to be operated by infinitesimal changes in the chemical balance of the cells fed by each capillary.

Two types of reaction appear to take place when one comes in contact with a very cold object. The superficial tissue at the site of contact actually freezes to a depth entirely dependent on the degree of cold and the length of the contact; and then, immediately below this "quick freeze" zone, the chilling makes the blood so viscous that capillary circulation comes to a halt—even though the tissue is not reduced to the freezing point. This superficial reaction is almost instantaneous (for example, if one grasps a metal object tightly at —40°C (—40°F).

If the part involved is not promptly rewarmed vasoconstriction of the arterioles in the chilled (but still unfrozen) adjacent tissue rapidly reduces the flow of blood in this zone.

Nature then calls into play an extraordinary emergency circulatory mechanism, the "capillary shunt". When a capillary bed is chilled to the point of inactivity,



the arterial blood by-passes these capillaries entirely and travels directly from arteriole to venule in an effort to keep the chilled part warm and continue the otherwise blocked circulation. This starts a flow of chilled blood back towards the heart, as well as totally depriving the shunted area of nourishment, for oxygen and food cannot pass through the walls of arterioles or venules to nourish tissue as they do in the capillaries—all that the blood in these vessels can do is to warm or cool adjacent tissue.

Unless the source of cold is removed a sinister, vicious circle now starts. These shunts are not continuous but start and stop in cycles, causing the area in danger to warm and chill in surges. If this cycle continues in a crisis to a point where the loss of general body heat exceeds the victim's heat-producing capacity, the "core" temperature of the body begins to fall below the danger point, the cyclical shunts stop, and the extremity starts to freeze. Nature thus is able to sacrifice an extremity rather than to risk the death of the whole organism. In this case, if the freezing part is not rapidly attended to, freezing can begin elsewhere, freezing at the original point of contact will deepen, and general cooling of the whole body will begin. This process can be greatly accelerated if the patient is in a state of panic or shock from other injury. Shock reduces circulation to the extremities directly without the occurrence of any of these cycles.

Although this automatic defence mechanism is excellent for the protection of the entire body under conditions of extreme cold, the total loss of some of the extremities can be the dramatic result of this extraordinary involuntary effort of the whole organism to protect itself from injury.

If the source of cold is below freezing point, the tissues will begin to freeze immediately after the initial spasm has slowed or blocked circulation. The exact cause of damage from frostbite is still a debatable subject. There is little doubt that when tissue is chilled very much below freezing point, ice crystals begin to take form and grow between the cells. When the chilling is extremely intense—as from touching and holding extremely cold metal with damp hands or coming into direct contact with liquid gases in a laboratory —crystals are believed to form directly inside the cells. As yet little is known about this type of injury. If the source of cold is not removed, the extra-cellular crystals continue to grow, deriving the water for their growth from the contents of the adjacent cells. Curiously enough, it does not appear as if the temperature itself or the existence of these crystals between the cells damages the cells themselves. However, unless this process is stopped very soon, the solution within the cells begins to become more and more concentrated as dehydration continues, and, after about half an hour, the cells appear to be severely damaged by this disruption of their own normal internal chemistry. It is believed that extremely fast and intense freezing, which would result in the formation of ice crystals actually within the cells, would probably kill all the cells involved immediately, and no presently known form of treatment could revive them.

It is interesting that tendons and bone are resistant to frostbite whereas nerves, muscles and particularly blood vessels are highly susceptible.

It is obvious that as vasoconstriction slows and then stops the flow of blood through the capillaries, prolonged removal of the steady flow of oxygen and nourishment to the adjacent tissues can lead to serious injury quite aside from the damage resulting from cell dehydration or ice-crystal formation.

It is also most important to emphasize the fact that very serious injury to tissue can occur at temperatures well above freezing, provided conditions are cold enough and stay cold long enough to result in spasm and prolonged blockage, or even a major slowdown of the capillary circulation. "Trench foot" and "immersion foot" are excellent examples of situations in which body tissue can be damaged as badly as by freezing, but with the external temperature never having to drop below about 10°C (50°F). This danger is only encountered, however, when parts of the body are kept immersed in frigid water or cold, wet clothing for long periods (Hedblom, 1961; Meryman, 1957).

DESCRIPTION OF THE INJURY

Mere numbness of toes, fingers or cheeks—followed by tingling after they have been rewarmed—does not constitute bona fide frostbite. True frostbite, even in its mildest form, does some real damage to the affected tissue.

At the time of the Korean War, the United States Army divided frostbite into four distinct classes or degrees, much in the same manner as burns. For the purpose of this description, however, I consider it best to classify frostbite in only two broad types: superficial and deep. In fact, the absence of reliable criteria with which to determine the true extent of frostbite injury until several days after the accident has always presented one of the greatest barriers to a full understanding of its initial treatment.

This simplified classification is now coming to be recommended by experts for two reasons: because it is very difficult to assign most cases of frostbite definitely to one or another of the four Army classes (even after the injury has been completely cured); and, more important from the practical standpoint, it is utterly impossible even for an expert to apply the four-type classification of frostbite accurately at or near the time of injury.

If the damage is only superficial the frozen part, though obviously white and frozen on the exterior, is soft and resilient below the surface when depressed gently and firmly before it has been thawed. In deep, unthawed frostbite, the injured part is hard and solid and cannot be depressed any more than wood or metal. However, these simple criteria are absent after thawing

has taken place, and time alone will reveal in retrospect the kind of frostbite that has been present. It is fortunate, therefore, that the treatment for all degrees of frostbite is identical in present medical practice, and an initial diagnosis of degree seems to be of little practical value.

The following description, however, may help to give an understanding of what happens in the two basic types:

Superficial Frostbite. This involves only the skin or the tissue immediately beneath it. There is a certain amount of whiteness or "waxy" appearance of the injured part at the outset. After rewarming, the frostbitten area will first become numb, mottled blue or purple and then swell, sting and burn for some time. In more severe cases, blisters will occur in twenty-four to thirty-six hours beneath the outer layer of skin. These slowly dry up and become hard and black in about two weeks. General swelling of the injured area (oedema) will subside if the patient stays in bed or at complete rest—it will last much longer if he refuses to remain quiet. Throbbing, aching and burning of the injured part may persist for several weeks, depending on the severity of the exposure. After the swelling finally disappears, the skin will peel and remain red, tender and extremely sensitive to even mild cold, and it may perspire abnormally for a long time.

Deep Frostbite. This is a much more serious injury and its damage not only involves the skin and subcutaneous tissue but also goes deep into the tissue beneath (even including the bone); it is usually accompanied by the formation of huge blisters. In marked contrast to superficial frostbite these take from three days to a week to develop. Swelling of the entire hand or foot will also take place, and may last for a month or more.

During this period of swelling, there may be marked limitation of mobility of the injured fingers or toes, and blue, violet or grey (the worst) discoloration takes place. After the first two days, aching, throbbing and shooting pains may be experienced for two or eight weeks. The blisters finally dry up, blacken and slough off, sometimes in the form of a complete cast of the finger or toe, nail and all, leaving beneath an exceptionally sensitive, red, thin layer of new skin, which will take many months to return to anywhere near normal. Sometimes, itching and abnormally great perspiration persist for more than six months after the initial injury, and the part will suffer lengthy or permanent sensitivity to cold.

In extreme cases of deep frostbite that have not been rewarmed rapidly permanent loss of some tissue almost invariably occurs. In such cases the skin does not become red and blistered after it has thawed, but turns a lifeless grey and continues to remain cold. If blisters occur, they will probably appear along the line of demarcation between the acutely frostbitten area and the healthy remainder of the limb. In cases of acute deep frostbite of the foot, adjacent swelling can extend as high as the knee.

In a week or two after injury, the tip of the injured area begins to become black, dry and shrivelled, but the rest of the damaged area may progress in one of two entirely different ways: the tissue may all become black, dry and shrivelled to almost half the normal size and mummified right up to the beginning of the healthy flesh; or it may become wet, soft and inflamed, if infection enters the picture. In the dry type, the uninjured remainder of the limb usually does not become intensely swollen or painful, and there is a fairly clear line of demarcation between damaged and undamaged tissue. In the wet type, the whole limb tends to become painful and swollen, and originally undamaged tissue may suffer serious damage unless the infection is promptly checked.

Surgical intervention is rarely needed in less than two months. Even minor surgery on frostbitten tissue should never be performed in the field. Under normal circumstances, in an extreme case in which the loss of some tissue is inevitable, despite careful treatment, the necrotic material will simply slough off at the proper point and at the proper time, with a maximum saving of the sound underlying tissue.

Occasionally, when unsuccessful treatment has resulted in wet gangrene, professional surgical intervention to stop cellulitis may be needed in a hospital. However, if even this type of case is kept scrupulously clean and sterile, the proper use is made of antibiotics and the patient stays constantly in bed at rest throughout the illness, the chances are high that autoamputation will eventually occur. (To be continued)

RESUSCITATION INSTRUCTIONS

The 12th Naval District Headquarters, San Francisco, has reproduced and distributed to all stations and ships in its area an estimated 400,000 copies of a Public Health Service wallet card featuring mouth-to-mouth resuscitation instructions. — Public Health Reports 78(11): 954, November 1963.

NEWSPAPER ADS AGAINST VD

The New York City Department of Health is using newspaper advertisements in its campaign to curb venereal disease. The ads symbolize the tragedies of the disease through the tears of a teenager. TV spot announcements are also used.—Public Health Reports 78(11): 954, November 1963.

DENTAL SECTION

RELINING DENTURES WITH SILICONE RUBBER

Sauer, John L., Jr. 721 South Forest, Ann Arbor, Michigan. Jour Michigan D. A. 46: 101–106 April 1964.

Use of Dow Corning Silastic 390 Soft Liner as a resilient liner proved successful in seven dentures, a failure in one denture, and questionable in one denture.

The patients, who ranged in age from 29 to 69 years, commented enthusiastically on the resilient liner. It was tolerated remarkably well by the oral mucosa.

The silicone rubber resilient liner for dentures maintained satisfactory physical properties under clinical conditions. Dimensional stability was satisfactory; dentures were not weakened by the use of the soft lining. Color stability was no problem and the dentures smelled clean and fresh after being rinsed and cleaned. The smoking habits of the patients did not affect the soft liner. Tea stained the rubber lining, but the stain washed off with finger pressure. Saliva and food debris were removed from the silicone rubber surface by ordinary rinsing and finger scrubbing.

The main clinical problems were related to bonding and finishing. Bonding of the rubber to the acrylic resin failed if the rubber was packed directly against acrylic resin that had previously been in service. A satisfactory bond was obtained if new acrylic resin was interposed between the old resin and the rubber.

If the denture peripheries were of soft rubber, finishing became a problem. No satisfactory method of finishing a soft periphery could be found, notwithstanding the manufacturer's directions. Dentures that were failures or qualified successes were so classified because the finish was rough, uneven, or cut. Soft lined dentures should not be cleaned with hypochlorite bleaching compounds; they cause the rubber to turn a yellow-white color.

USE OF ANORGANIC BONE IN DENTISTRY

Alvin F. Gardner DDS PhD, University of Maryland, Baltimore, Md. Jour of Oral Surgery Anesthesia and Hospital Dental Service, 22: 332–340, July 1964.

This article presents a review of all published experimental work relating to ethylenediamine extracted bone and its use as an implant material. Over fifty seven sources are listed in the bibliography of previous studies. The advantages of the use of chemically treated heterogenous bone grafts are carefully weighed against the always present disadvantages. The criteria for an ideal bone graft material are given as follows: (1) the implant should be accepted with little or no host tissue reaction; (2) the implant material should be readily revascularized and (3) the implant should be resorbed rapidly and replaced by host bone. The consensus of the literature reviewed indicates that ethylenediamine treated bone satisfies all the requirements except the last. While early host acceptance, graft revascularization, and union with host bone are consistent findings in anorganic grafts, total replacement by host bone is prolonged over extended postoperative periods.

In an effort to increase the resorption and replacement rate of anorganic bone the author has utilized beta-aminopropionitrile (BAPN) acid fumarate with the osseous implant. He reports that bone formation can be induced by this procedure. The author advocates the use of anorganic bone as a carrier for various substances (e.g. BAPN) in more extensive investigations in an effort to find an optimal, inexpensive, readily available source of osseous graft material for oral surgical use. (Submitted by CAPT. P. J. BOYNE DC USN USS Bon Homme Richard CVA–31).

ORGANIC FACTORS IN CALCULUS DEPOSITION

Leung, S. Wah. Faculty of Dentistry, University of British Columbia, Vancouver 8, British Columbia, Canada, Proc Inst Med Chicago 25: 67–68, May 1964.

Recent studies suggest that the organic matrix of calculus may play a more positive role in the formation of calculus than heretofore believed, and that a more effective means of inhibiting dental calculus may be found. Numerous past attempts to discover chemical means of removing or inhibiting calculus have been unsuccessful, chiefly because of the remarkable similarity in the inorganic composition of calculus and enamel. Materials which dissolve the inorganic salts of calculus usually have a similar effect on the teeth.

Recent investigators have directed their attention to factors affecting the organic portion of calculus rather than the inorganic. The organic matrix seems to play an essential role in the calcification mechanism, particularly in providing the sites where nucleation of the calcium and phosphate crystals can occur.

A variety of substances known to affect organic molecules have been tested, especially enzymes. The enzymes most effective in inhibiting calculus appear to be those with high proteolytic activity and low carbohydrase activity. Such enzymes reduce calculus formation by about 24 percent when incorporated into a tooth paste and used for six months. Other enzymes when incorporated into chewing gum also reduce calculus formation to some extent. Some success also has been reported with antibiotics and antiseptics.

DENTAL HEALTH STATUS OF CHILDREN FIVE YEARS AFTER COMPLETING SCHOOL CARE PROGRAMS

Galagan, Donald J., Law, Frank E., Waterman, George E., and Spitz, Grace Scholz. U. S. Public Health Service, Bethesda, Maryland. Public Health Reports 79: 445–454, May 1964.

Do school dental care programs continue to benefit participants and nonparticipants after the programs have been discontinued? Follow-up dental examinations conducted in Richmond, Indiana, and Woonsocket, Rhode Island, five years after the programs of comprehensive dental care were discontinued show that continuing benefits accrued in both communities. The habit patterns established during the Richmond and Woonsocket clinic programs carried over to a considerable degree into the succeeding five years.

The two projects, conducted for periods of five and six years, offered comprehensive dental care, including four successive treatment series in which the children received an examination, a dental prophylaxis, dental treatment as required, and topical fluoride applications. The educational phase of the programs was directed not only to participants and their families but to a community-wide audience.

Follow-up studies showed that participants and nonparticipants alike sought and received considerably more dental care during the five years after cessation of the projects than had children of the same age during the five years preceding the clinic programs. However, proportionately less dental care was obtained during the five years immediately after termination of the projects by participants than had been obtained during the project itself. The data provide evidence of the importance of an uninterrupted program of regular care if the dental health needs of school children are to be fully and promptly met.

For five years after termination of the clinic programs, substantially larger numbers of carious teeth and substantially fewer restored teeth were present in children of every age.

Even though this expected backsliding occurred, five years after the care program had ended the oral health status of all children in both communities was substantially improved over that of chldren of the same age when the program was initiated ten years earlier. Every age-specific rate for carious teeth was smaller, and every rate for filled teeth larger than at the start of the program. For missing permanent teeth, there was an overall reduction in the number per child.

The data suggest that some portion of the improvement in the health status of children in these two communities resulted from a change in their habits of seeking dental care.

PERSONNEL AND PROFESSIONAL NOTES

Increased Availability of Naval Dental School Short Courses. Improved teaching methods, made possible by advanced television techniques, have permitted the U. S. Naval Dental School to accommodate larger enrollments in its series of short postgraduate courses. The remaining courses for this fiscal year are:

Course		*Dates*
Preventive Dentistry		
Captain Rovelstad	—	Oct 19-23, 1964
Endodontics		
Captain Bucher	—	Oct 26-30, 1964
Oral Surgery		
Captain Marble	—	Jan 4-8, 1965

Removable Partial Dentures		
Captain Kratochvil	—	Jan 25-29, 1965
Complete Dentures		
Captain Stoll	—	Feb 8-12, 1965
Oral Pathology		
Commander Green	—	Feb 8-12, 1965
Occlusion		
Captain Rovelstad	—	Feb 15-19, 1965
Operative Dentistry		
Captain Armstrong	—	Mar 1-5, 1965
Oral Roentgenography		
Captain Parks	—	Mar 22-26, 1965
Fixed Partial Dentures		
Captain Pepper	—	Apr 19-23, 1965

This increase in class size permits additional enrollment from those district and staff dental officers who have previously been assigned quotas as announced in *U. S. Navy Medical News Letter* 44(3): 26. Applications from naval officers will be directed to the Chief, Bureau of Medicine and Surgery (Code 6), Navy Department, Washington, D.C. 20390. Army officers will forward their applications through the Surgeon General, U.S. Army, Washington, D.C. 20315. Applications from Air Force officers will be made through the Director of Medical Staffing and Education, Office of the Surgeon General, Headquarters, USAF, Washington, D.C. 20333. Applications from Veterans Administration officers will be directed to the Assistant Chief Medical Director for Dentistry, Department of Medicine and Surgery, Veterans Administration, Washington, D.C. 20420. Public Health Service Officers will submit their applications through the Chief Dental Officer, Public Health Service, Department of Health, Education and Welfare, Washington, D.C. 20201.

Availability of Stannous Fluoride and Compatible Pumice. The Procter and Gamble Company has notified this Bureau that they will be unable to supply stannous fluoride and compatible pumice in the quantities announced in the *U. S. Navy Medical News Letter* 44(5): 24, until the technical difficulties of packaging for shipment, etc., are overcome. Until the time that the larger packages are available, all facilities should order and utilize the starter and refill kits now available from the Procter and Gamble Company.

The 7073 starter kit contains material necessary to perform 50 stannous fluoride prophylaxes and 50 topical applications. The 7074 refill kit contains material necessary for 100 stannous fluoride prophylaxes. The cost of either kit is the same, $6.50, and can be obtained only from the one source noted below. (Mr. A. P. Austin, Proctor and Gamble Company, Winton Hill Technical Center, Cincinnati 24, Ohio).

CB Center Hosts Meeting of Navy Dentists. The Dental Department, U.S. Naval Construction Battalion Center, Davisville, Rhode Island, hosted a meeting of dental officers stationed in the Narragansett Bay area, on 21 August 1964. The guest speaker, William F. Varr, MD, is anesthesiologist at Kent County Memorial Hospital, Warwick, Rhode Island. Dr. Varr is a Diplomate of the American Board of Anesthesiology and a Fellow of the American Academy of Anesthesiologists. His topic, "The Management of Acute Emergencies in the Dental Operating Room" stimulated great interest as evidenced by the lively audience participation following his lecture. Over forty dental officers, representing CBC/CBLANT, Quonset Point, Newport, ASA, and several ships in the area, were present.

The meeting concluded with a cake and coffee social hour, highlighted by the cutting of a birthday cake commemorating the fifty-second anniversary of the founding of the U.S. Navy Dental Corps. The official cake cutter was LT Paul L. Neary, DC USNR, the junior dental officer stationed in the Narragansett Bay area.

Navy Dentist Lectures on Endodontics. The Fall Meeting of the Southwest Virginia Dental Society, on Thursday, 24 September 1964, at Bristol, Tennessee, featured a Clinic by CDR Edward C. Penick, DC USN.

CDR Penick received his BS degree from Duke University and DMD from the University of Louisville School of Dentistry. He has done postgraduate work at the U.S. Naval Dental School and graduate study at the University of Alabama Dental School.

He entered the Navy after completion of Dental School and his assignments have included several tours of sea duty and numerous shore stations in the United States and the Far East. He was formerly head of the Endodontic Division at the U.S. Naval Dental School, Bethesda, Maryland. He is currently head of Endodontics at the Portsmouth Naval Hospital. CDR Penick has published several articles on Endodontics. He is a member of the American Dental Association and the American Association of Endodontists.

Navy Dental Officer Presents Paper. CAPT G. W. Ferguson, DC USN, the Dental Officer, U.S. Naval Station, Newport, Rhode Island, presented a paper entitled, "Rubber Dam" before the Texas Panhandle Dental Society on 28 September 1964 in Borger, Texas.

Accident mortality would probably be reduced by 20% if traffic casualties were given proper treatment before arrival in hospital. It is suggested that everyone who receives a driving license should be trained in first aid. —WHO Chronicle 18(9): 349, September 1964.

From the Note Book

Indoctrination Courses for Medical Officers. In July 1964 indoctrination courses were conducted for medical officers at the U.S. Naval Academy and at the U.S. Naval Training Center, San Diego. Approximately 100 indoctrinees participated in the two programs and each had the salient feature of being under orders to the operating forces.

It is too soon to evaluate the effectiveness of the courses in terms of the indoctrinees' performance in their respective duty assignments. However, the reception and attitude of the students, as reported by the instructors, have given us every indication that the courses were a tremendous success.

Because of the large turnover of medical officers on active duty each summer, it has been necessary in the past to assign some officers to operational billets with a minimum of military indoctrination. Needless to say, this has invited adverse criticism from many operational commanders. Every effort has been made by this Bureau to provide adequate indoctrination programs for new officers reporting from civilian life. With the two established courses in July, and the other less formal courses held in naval hospitals and certain major fleet commands, we are making considerable progress toward solving the problem.

The course at San Diego was held this year for the first time. Instructors were drawn from various Navy and Marine Corps commands in the area. Field trips were conducted to local points of interest and to selected fleet commands.

The course at the Naval Academy was more established. The same course had been presented at the Officer Candidate School, Newport, Rhode Island during the two previous years. Only the location and a few of the instructors were changed. This change was necessitated by the lack of BOQ facilities at Newport. To compensate for this sudden transferral of the course, it was necessary to bring some experienced instructors from Newport. A number of instructors were carefully selected from the Washington area to supplement the teaching staff from Newport.

—Medical Corps Branch,
Professional Division, BuMed.

Technician Training Available for Volunteer Hospital Corpsmen. Nominations are urgently needed for courses of instruction in Submarine Medicine, Nuclear Medicine, Pharmacy and Medical Deep Sea Diving Technic for classes to be convened during the next six months. Applicants should be qualified in accordance with eligibility requirements set forth in BUMEDINST 1510.4I and Chapter 12.2, Enlisted Transfer Manual as applicable. In order to assure adequate lead time in issuing orders personnel desiring assignment to the above courses of instruction are requested to submit applications as soon as possible.

—Director, Hospital Corps Division, BuMed.

BUMED INSTRUCTION 6230.11C

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations
Subj: Malaria; control and prevention
Ref: (a) NAVMED P–5052–10, Malaria: Clinical Features, Treatment, Control, and Prevention; 30 Jun 1959 (NOTAL)
(b) Control of Communicable Diseases in Man, current edition, American Public Health Association, 1790 Broadway, N.Y., N.Y. (NOTAL)
(c) NAVMED P–5042, Film Reference Guide for Medicine and Allied Sciences, current edition (NOTAL)
(d) NAVMED P–5010, chapters 9, 10, and 11, Manual of Naval Preventive Medicine (NOTAL)

1. *Purpose.* To establish policy regarding the control and prevention of malaria in Navy and Marine Corps personnel and their dependents.

2. *Cancellation.* BUMED Instruction 6230. 11B is canceled.

3. *Background*

a. Malaria has seriously interfered with military operations in the past and can do so again when military forces are operating in malarious areas. Military malaria control and prevention depend on mosquito control, individual protective measures, and chemo-prophylaxis as outlined in references (a) and (b). Under mobile tactical situations, drugs and personal protective measures must be relied upon for malaria prevention since control of the mosquito and its environment may not be feasible or practicable.

b. The naval operating forces may be required to deploy component units on short notice to any place in the world to accomplish a wide variety of missions. It is necessary, therefore, that components of the operating forces subject to deployment to malarious areas be prepared at all times to institute chemo-prophylactic and other preventive measures.

c. Recent studies reported by the U.S. Air Force, including altitude stresses, psychomotor performance, and other pharmacologic investigations reveal no specific contraindication to the use of combined chloroquine-primaquine prophylaxis as described in subparagraph 4c. The same precautions which pertain to administration of any drug to flight personnel in accordance with accepted aviation medicine practices are recommended.

d. In several areas of the world, strains of malaria parasites have been found that are resistant to one of more antimalarial drugs. While at the present time these strains are only a small minority of all strains, they pose a definite threat to any military or naval operations that may take place in an endemic area. It is essential that the Bureau of Medicine and Surgery be informed of all patients with malaria suspected of being drug-resistant so that appropriate action, including therapeutic trials, may be initiated promptly.

4. *Action*

a. Fleet or force commanders are requested to direct those subordinate units which are subject to operations in malarious areas to maintain a 3-month supply of malaria control and prophylaxis material on hand at all times and shall direct its use when indicated.

b. Personnel serving in areas where malaria is a real or threatened hazard or serving with units subject to deployment in such areas shall be instructed regarding the nature and transmission of the disease and in the use of personal protective measures including, where indicated, protective clothing, bed nets, insecticides, and repellents. Reference (c) provides a list of training aids.

c. In addition to the use of personal protective measures, Navy and Marine Corps personnel, including aviation flight personnel, exposed to the risk of acquiring malaria, shall be placed on chemoprophylaxis as follows:

(1) One tablet once-a-week of combined Chloroquine and Primaquine Phosphates (FSN 6505–753–5043 or FSN 6505–854–2239) for the duration of exposure.

(2) Upon termination of the risk of exposure, continue weekly doses of the combined Chloroquine and Primaquine Phosphates tablet for 6-additional weeks.

d. Dependents and civilian personnel under the cognizance of the Navy Department, living in areas where malaria is a real or threatened hazard, may receive chemoprophylaxis on a voluntary basis as follows:

(1) Adults. Chloroquine and Primaquine Phosphates tablet once weekly as for military personnel in subparagraphs 4c(1) and (2).

(2) Children

(a) Pyrimethamine (Daraprim) tablet, 150 mg., (nonstandard) is recommended in the following dosage:

Body Weight	*Weekly Dose*
15-29 pounds	37.5 mg. base (¼ tablet)
30-59 pounds	75.0 mg. base (½ tablet)
60-99 pounds	150.0 mg. base (1 tablet)
100 or more pounds	300.0 mg. base (2 tablets)

(b) As an alternate drug for children, chloroquine base in a dose not to exceed 5 mg per kilogram of body weight may be used. In case of vivax malaria, this drug only suppresses manifestations of the disease during administration.

e. Adverse or unusual reactions to the use of chemoprophylactic drugs should be reported promptly to BUMED (Code 72). Likewise, BUMED should be informed by message whenever the existence of a drug-resistant strain of malaria parasite is suspected. Suspicion should be aroused when normally adequate doses of malarial drugs fail to prevent or cure clinical malaria or parasitemia.

f. Measures for the control of the mosquito and its environment shall be instituted to the extent practicable under the particular military situation. Reference (d) provides information on methods for mosquito control aboard ship and ashore.

R. B. BROWN
Acting

DETERGENT WASTES

Evidence of widespread seepage of detergents from septic tanks into water supplies has led the Maryland Water Pollution Control Commission to adopt rigid regulations to prevent laundries and car-washing businesses from flushing untreated detergents into streams and septic tanks.—Public Health Reports 78(11): 954, November 1963.

800 PER CENT INCREASE IN LUNG CANCER DEATHS

Lung cancer has had the greatest rise—more than 800 per cent—in mortality of any non-infectious disease in the United States over the last 30 years. The cause is generally attributed to the increase in cigarette smoking. At the same time, the American Cancer Society points out, deaths from stomach cancer have shown a sharp, dramatic drop. The cause is unknown.

POSTGRADUATE SHORT COURSES FOR MEDICAL DEPARTMENT OFFICERS SPONSORED BY THE DEPARTMENT OF THE ARMY DURING FY 1965

Notice: The attention of readers is invited to a previous listing of postgraduate short courses for Medical Department Officers sponsored by the Department of the Army for the first half of fiscal year 1965 which was published in the U.S. Navy Medical News Letter, Vol. 43, No. 11, Page 17 of 5 June 1964.

The following postgraduate professional short courses will be conducted by the Army Medical Service during Fiscal Year 1965. Officers desiring to attend should submit their requests in ample time to reach the Bureau at least 8 weeks prior to the convening date of the course desired. This lead time is necessary in order to comply with the Army's request to return unused quotas 6 weeks in advance of the convening dates of the courses listed.

COURSES	INSTALLATION	DATE
Neuropathology	Armed Forces Institute of Pathology	1-5 Feb 1965 MC
Annual Armed Forces Institute of Pathology Lectures—1965	Armed Forces Institute of Pathology	15-19 Feb 1965 MC
Pathology of the Oral Regions	Armed Forces Institute of Pathology	1-5 Mar 1965 DC, MC
Electron Microscopy	Armed Forces Institute of Pathology	15-19 Mar 1965 DC, MC, MSC
Geographic Pathology of Microbiologic Diseases	Armed Forces Institute of Pathology	5-9 Apr 1965 MC, MSC
Walter Reed General Hospital Otolaryngology Basic Science Course	Armed Forces Institute of Pathology	3 May-25 Jun 1965 MC
Surgical and Orthopaedic Aspects of Trauma	Brooke General Hospital	8-12 Mar 1965 DC, MC
Oral Surgery	Letterman General Hospital	5-9 Apr 1965 DC
Advanced Medical Operations in Modern Warfare	Medical Field Service School, Brooke Army Medical Center	1 Mar-2 Apr 1965 All Corps
Advanced Military Nursing	Medical Field Service School, Brooke Army Medical Center	8-19 Mar 1965 NC
Advanced Pathology of the Oral Regions	U.S. Army Institute of Dental Research, Walter Reed Army Medical Center	8-12 Mar 1965 DC, MC
Oral Diagnosis and Therapeutics	U.S. Army Institute of Dental Research, Walter Reed Army Medical Center	3-7 May 1965 DC
Principles of Military Dental Research	U.S. Army Institute of Dental Research, Walter Reed Army Medical Center	10-14 May 1965 DC, MSC
Tri-Service Pediatric Seminar	Walter Reed General Hospital	3-5 Mar 1965 MC
Symposium on Current Surgical Practices	Walter Reed General Hospital	12-14 Apr 1965 MC
Surgical Nursing	Walter Reed Army Institute of Research	8-12 Mar 1965 NC
Preventive Medicine and Laboratory Officer Symposium	Walter Reed Army Institute of Research	29 Mar-2 Apr 1965 MC, MSC
Maternal and Child Health Nursing	William Beaumont General Hospital	5-9 Apr 1965 NC

Notice: Army PG Course "Introduction to Research Methods", scheduled to be conducted at the AFIP 2–6 November 1964, has been cancelled.—Training Branch, Professional Div., BuMed

IMPORTANT NOTICE

OFFICER PREFERENCE AND PERSONAL INFORMATION CARD

The attention of all officers of the Medical Department is invited to BUPERS Instruction 1301.25B. This reference sets forth detailed instructions regarding submission of the new Officer Preference and Personal Information Card, NAVPERS 2774 (Rev. 5–62).

It appears that many officers neglect to submit these cards because they feel they are not used. It is pointed out that after being processed through the Bureau of Naval Personnel, preference cards are forwarded to the Bureau of Medicine and Surgery to become part of each officer's record. These cards are constantly utilized in making assignments and their importance cannot be emphasized too strongly. They should be submitted annually or when significant changes occur. The items that receive particular attention in this Bureau are duty preferences, dependency status, ages of dependents, current residence, and any comments contained in Item 24 (Remarks). Careful attention should be given to the completion of Section 20 (Next Duty Preferences). The block beneath sea, overseas, and shore should be filled in to indicate which type of duty is first, second, or third choice. Nurse Corps officers are requested to completely fill out Item 16 (Dependent Members of Household) when applicable, and to note in Item 24 (Remarks) whether or not dependents are living and moving with them.

Officers who consistently indicate preference for a specific geographic area, with little or no consideration given to the type activity and/or primary billet, may penalize themselves professionally. The officer who is enamored with one Coast, or who prefers "any billet" so long as he gets a particular area, should be aware that his assignment may be inconsistent with the enhancement of his professional qualifications and illogical in consequence of his prior training and experience. In proposing officers for changes of duty, needs of the service are balanced carefully against career requirements and personal preferences. The officer who shows willingness to subordinate professional qualification to an area choice takes an extremely shortsighted view of his career.

This Bureau commends and wishes to assist officers who aspire to attainment of further education. To this end, whenever preferences are based on the desire for assignment near a civilian university in order to earn credits in part-time educational programs, every consideration consistent with service needs will be given.

Although Officer Preference and Personal Information Cards should normally be submitted annually on 1 March, a submission is welcome at any time an officer desires to indicate a change in his duty preference(s) or when some other factor arises which he desires to report for consideration.

It is recommended that all Medical Department officers review their service records to determine whether they contain a copy of the current preference card as required by BUPERS Manual Art. B–2207(4) (b). If not, officers should submit a current card immediately.

—Medical Corps Branch, Professional Division, BuMed.